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## (54) Golf score devices

(57) An electronic score device 10 has display 14 for hole number, marker's score, marker's stableford score, hole yardage, hole par, hole index, player's score, player's stableford score., operating buttons 18, 19, 20, 21 are used to enter an actual number of strokes and device 10 includes programmable means and memory to operate on the inserted score and produce the appropriate display. The device 10 can be programmed to several courses and can download data to a control unit and receive programming data from the control unit.

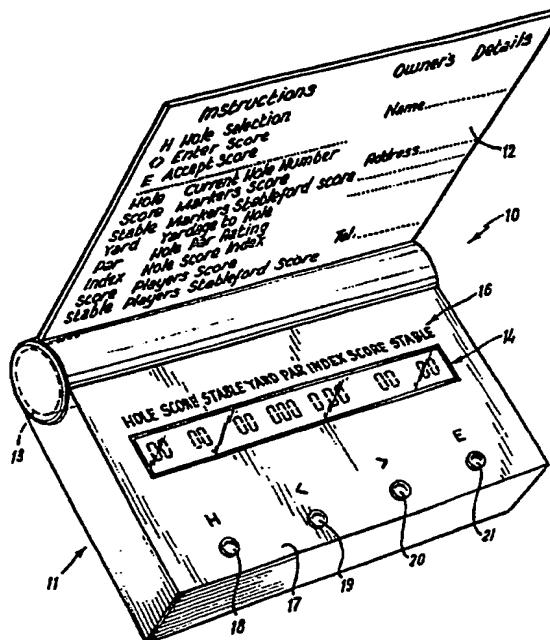
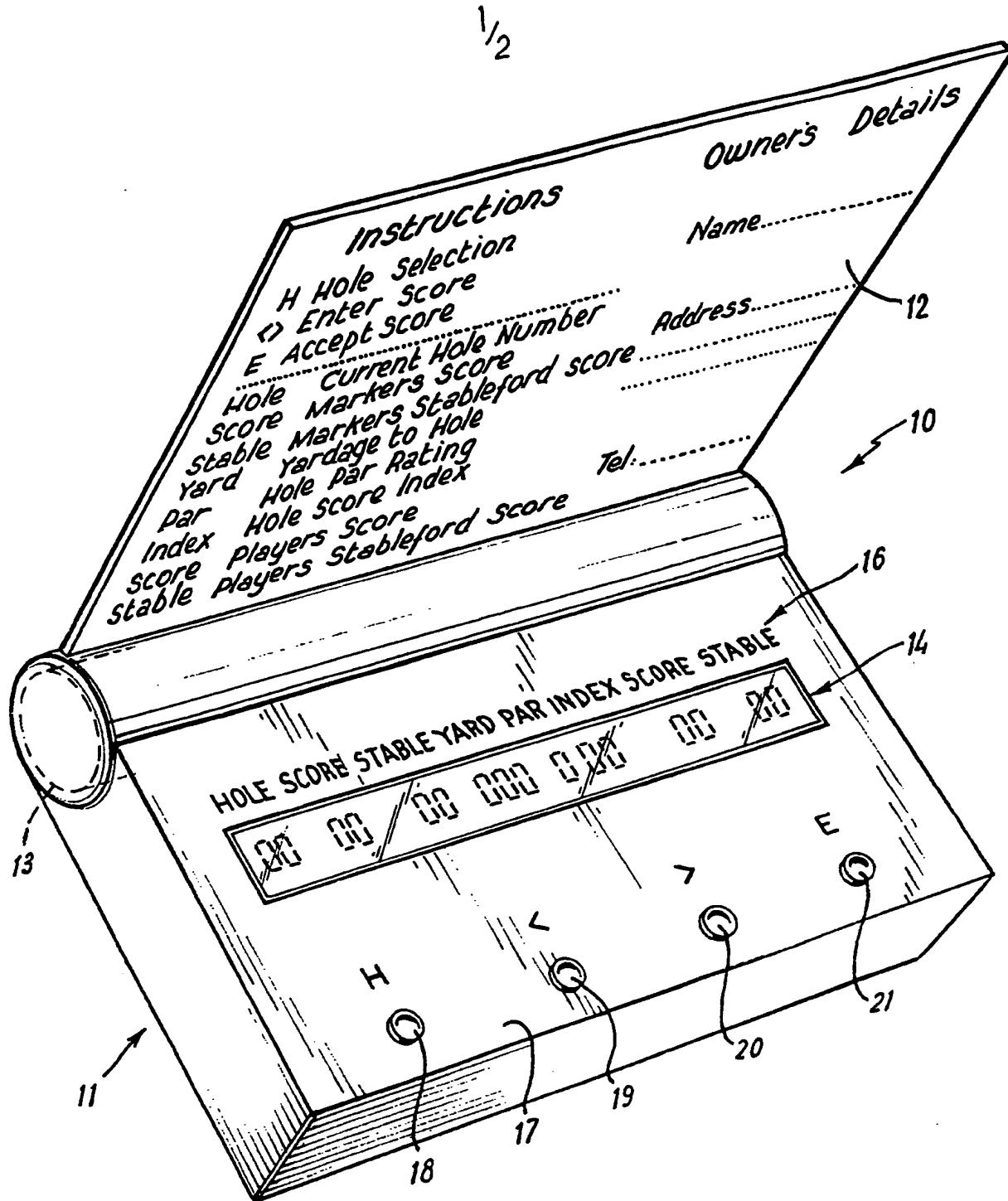


FIG. 1

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**FTE.I**

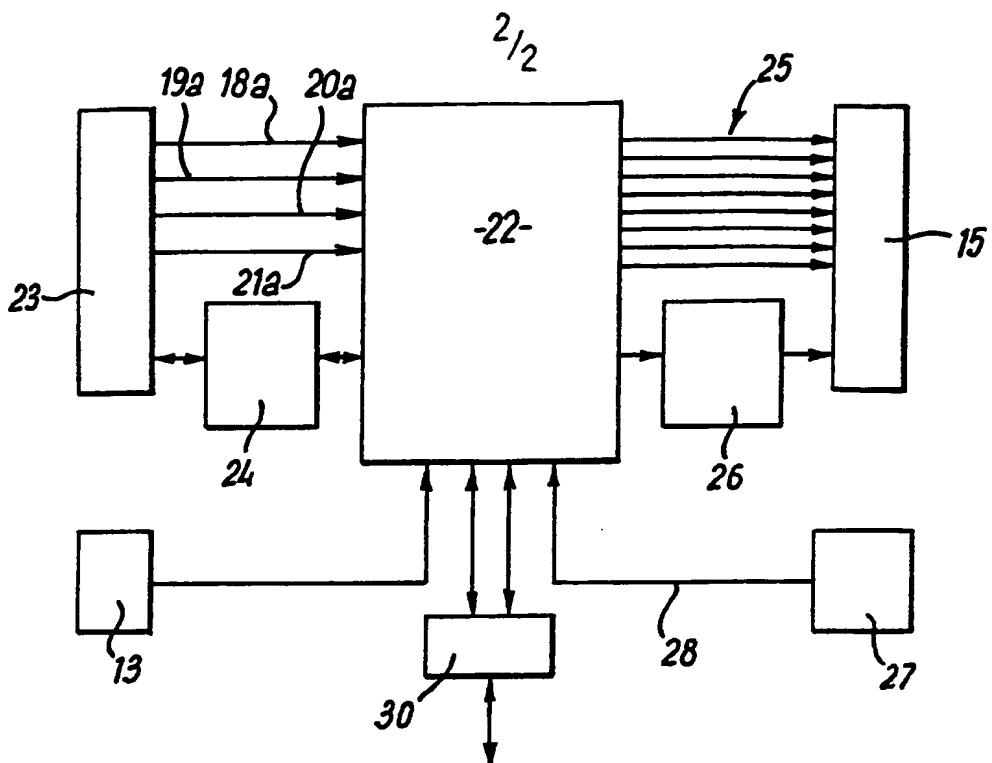


FIG. 2

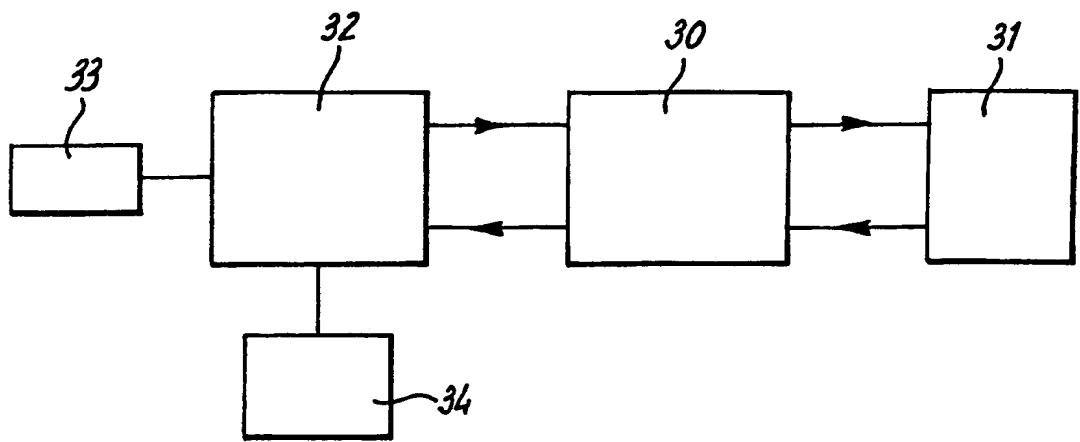


FIG. 3

**GOLF SCORE DEVICES**

THIS INVENTION relates to golf score devices.

According to one aspect of the invention, an electronic golf score device comprises a display providing for each hole a display of hole number, marker's score, hole yardage, par rating, stroke index, players' stableford score, and player's score; means operable to insert the number of strokes taken at a hole by the marker and the player; and programmable means for receiving the number and producing the relevant display.

The display may additionally include marker's stableford score.

The device may be adapted for recording the score of four golfers, and means for selecting which golfer's score is displayed.

The device may comprise a lid movable between an open position in which the display is visible and a closed position covering and protecting the display.

The device may include means for displaying, for each hole, information relating to that hole, and control means for inserting information relating to the hole and a golfer, the control means comprising first means for selecting the hole in respect of which information is to be displayed, means for inserting a score for

the selected hole, and programmable means responsive to the inserted score for determining the information to be displayed.

According to another aspect of the invention, an electronic golf score device comprises means for displaying, for each hole, information relating to that hole, and control means for inserting information relating to the hole and a golfer, the control means comprising first means for selecting the hole in respect of which information is to be displayed, second means for inserting a score for the selected hole, and programmable means responsive to the inserted score for determining the information to be displayed.

There may be means for correcting the inserted score.

The second means may comprise a single operating element.

The programmable means may have a single operating element.

The displayed information may be as above.

The programmable means may be adapted to receive an inserted score and initiate display of the relevant stableford score.

The device may be cooperable with a control unit to transfer data from and to the control unit for loading data into the

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device and downloading score data to the control unit.

The device may be sized to be hand-held.

The invention provides an electronic golf score card.

The invention may be performed in various ways and one specific embodiment with possible modifications will now be described by way of example with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of a device for recording scores in golf;

Fig. 2 is a circuit; and

Fig. 3 is another circuit.

Referring to Fig. 1, a device 10 for recording scores in a game of golf has a housing 11 and a pivoted or flip top lid 12 which when closed provides protection for housing surface 17. The device 10 has a rechargeable or replaceable battery or batteries 13 as a power source in the housing 11; access to the battery is obtained by removing the lid 12. When open, the lid 12 can act as a shade against the sun, improving visibility of the display. In a modification the lid is omitted and the battery is accessible by a removable cover for the battery.

The housing 11 contains circuitry, described below, which provides a visible readout 14 comprising a 24-character liquid crystal display (LCD) 15 arranged in columns for indicating information as indicated by legends 16 marked on surface 17 of housing 11, namely

HOLE (hole number); SCORE (marker's score); STABLE (marker's stableford score); YARD (hole yardage); PAR (par for the hole); INDEX (stroke index); SCORE (player's score); STABLE (player's stableford score). In a game between two golfers A, B each golfer will have a device 10. The device 10 of golfer A is pre-loaded, as described below, with information relevant to golfer A e.g. handicap or strokes receivable and the device 10 of golfer B is pre-loaded with information relevant to golfer B. Golfers A and B exchange these devices, and during play of a round golfer B 'marks' the device 10 of golfer A and golfer A 'marks' the device 10 of golfer B. Thus, the marker's score entered into the device 10 of golfer A is the actual score of golfer B, and the players score entered into the device 10 of golfer A is the actual score of golfer A. At the end of a round, the devices 10 are again exchanged. This corresponds to the procedure used with conventional hand written golf cards.

In a modification the legends 16 are omitted.

In a modification the display may have more characters  
e.g. 48.

Only four function or operating keys or buttons 18, 19, 20, 21 enable all the required information to be programmed into the device. Button 18 selects the hole number one to eighteen; button 19 allows information to be decremented, button 20 allows information to be incremented, and button 21 is an enter key allowing information to be stored in the device 10.

The device 10 comprises of a micro-controller integrated circuit (MCU) 22 and includes the required software. The MCU 22 carries and calculates the mathematical functions required, then produces the information for the readout or display. As will be described, buttons 18 to 21 are used by the operator to set up and operate the device.

The buttons 18 to 21 form part of a keyboard 23 (Fig. 2) and are connected directly to the MCU 22 via lines 18a to 21a respectively and via a random access memory (RAM) 24.

The MCU 22 is connected by lines indicated at 25 to the display 15 and via a read only memory (ROM) 26. A timer or clock 27 provides control signals on line 28 to the MCU 22.

The operation of the device 10 prior to playing a round of golf is as follows:

The device 10 is set in an input mode.

The display 14 includes an alpha-numeric display.

The identity of the course and details of the golfers whose scores are to be recorded in the device are entered.

Thus if the course is Devilish, operation of button 18 to move a cursor to letter D, followed by operation of button 21 to transfer D to memory 24; then operation of button 18 to move a cursor to letter E, followed by operation of button 21 to transfer E to memory 24. The entered letters D, E will thus act as a code for the scores to be recorded during play. Each golfer may have a

personal identifying code for this club which can be letters or numbers or a mixture and this is similarly keyed in to memory 24. Operation of button 18 selects the hole number, for this example we shall select hole number one. Then press the enter key 21. The enter key will then be repeatedly pressed until the column indicating the hole yardage is selected i.e. illuminated. Button 20 is then held down until the yardage for hole number one is displayed. Should the operator overshoot the correct number, operation of the button 19 will decrement the displayed yardage until the correct number is displayed. Continuing along the columns in a similar way all the course details can be installed prior to the game.

Also, before use, the random access memory 24 is loaded with details of the handicap/strokes receivable of both the marker and the player, again by using buttons 18, 21.

The hand held device does not incorporate an ON/OFF power switch.

- (a) The circuitry is designed to operate with low power consumption and has a standby mode if not in use for over 30 minutes. To power up if the device is in standby mode, a code is inserted by button 18 and the last displayed display is re-displayed. When the device 10 switches to standby, all recorded or entered data is held in the memory store until the next operation. The entered playing data can be removed or cleared by pressing buttons 18, 21 together, leaving the course details in the memory ready for re-use.
- (b) the battery power supply is adequate for well in excess of twelve months drainage and possibly for up to eighteen months

subject to operational use. A warning indicator may be provided to indicate a battery low condition.

- (c) the device is deemed to be 'switched on' following fitting of the battery(ies)
- (d) additionally, the device need not be permanently powered in order to facilitate data storage; the data may be held stored for a period e.g. 72 hours or more adequate to allow for battery replacement.
- (e) absence of an ON/OFF switch simplifies device operating stages.

In a modification the device has a manually operable on/off switch.

To insert the course and golfer data, a combination of the command buttons 18, 19, 20 and 21 is employed. Typically, say:

- (a) 18 is pressed twice and then followed by 19 being pressed twice, to bring about the LCD alpha numeric display facility
- (b) from a blank screen, the first depression of 18 will bring about the appearance of the letter 'A'. Thus if 'D' is required, then a further three depressions of 18 will suffice, with 'D' appearing in the extreme left character/digit LCD position.
- (c) assuming that DEVILISH course needs to be displayed, then 21 is pressed once to capture 'D' in position
- (d) hence, a combination of pressing 18 and 21 will allow for a golf course to be displayed
- (e) once the course name or code has been finally displayed, then 21 will be pressed twice to store in memory. Then:

(f) the LCD display will be cleared and again, the use of 18 and 21 will allow for the golfer identification to be selected, displayed and stored in memory; such information is only entered into the software once per game occasion.

Button 21 is used to indicate the end of a single command, or series of commands, say:

one depression = end command

two depressions = end of command series

To download data from the hand held device 10 to a Mother Unit 31, a combination of 19, 20 and 21 depressions is employed.

Thus for example, after connection to the mother unit pressing button 19 three (or say four) times in succession, followed by pressing button 20 places the device into downloading mode and causes the display to show downloading OK and the golfer can then press button 21 to send the information to the mother or receiving unit.

The operation of the device during a round of golf is as follows. The device 10 is set in play mode. Button 18 is used to select the number of the hole being played; for this example we shall select hole number one. Then press the enter button or key 21 and the next column on the row will be automatically selected and the marker's score can be entered by pressing button 20 until the display indicates the medal number of strokes taken. Button 19 is used to decrement the displayed score should the operator overshoot the

number required. By pressing the enter key button 21, the score will be recorded in the read only memory 26 and the display will move to the next score column. When the hole number has been selected, the adjacent 'score' display will start flashing, to indicate that the next step is entry of the marker's score. When the marker's score is entered, the display for the player's score will start flashing, to indicate that the next step is entry of the player's score. The period of flashing may be 30 seconds for example or until the player's score is entered. This operation can be carried out for each player, filling in the medal scores as required, and hole by hole. The unit 22 automatically calculates and displays the stableford scores based on the medal score entered on button 21 by reference to the stroke index and handicap details of marker and player previously stored in the random access memory 24.

Thus for each hole, only the two scores require to be entered for the two golfers.

If there are four golfers there can be upper and lower similar displays and button 18 is used to move between displays.

Each operation of button 18 increases the displayed hole number by one. After nine holes, the next operation of button 18 will cause the display to show for each golfer the nine hole totals for score, stableford, yard and par. The next operation of button 18 causes hole 10 to be displayed. The twentieth operation of button 18 causes the display to show the totals for the holes 10 to 18 inclusive.

The next operation of button 18 causes a repeat display of the nine-hole totals, and the next operation of button 18 causes the 18 hole totals to be displayed. The next operation of button 18 causes hole number 1 to be selected and displayed.

In a modification, after the scores have been entered for a hole, the display continues for 30 seconds and then moves to the next hole, ready for scores to be entered.

Thus, during use, if at hole number 1 the marker takes five strokes, he operates button 20 five times and the marker's score display will show 5. Button 19 can be used to decrement a display prior to operation of button 21. Operation of enter key 21 will then adjust this medal score as determined by the handicap, for example, reduce the score to a net score of 4, and this adjusted net score will be held in memory. If the information for hole number 1 is subsequently displayed, the displayed marker's score will remain 5 and the displayed marker's stableford score will be 2 if the par for that hole is 4; the marker's score is 5 net 4 in this example because the marker receives a deductible stroke for this hole.

Similar steps apply to the player's score, and the marker's and player's stableford scores as displayed also are adjusted by unit 22 in accordance with the loaded handicap/strokes receivable details, as above.

The unit 22 is adapted to co-operate with an interface unit 30 typically an RS232 interface which would normally be at a

fixed location e.g. the club house. As shown in Fig. 2 the interface unit 30 can be connected to a controller or mother unit 31 including a computer with memory store and handicap software, typically operated by the club Secretary, and can be connected to a computer 32 having a keyboard 33 and display monitor 34, as mentioned below.

Preferably, the course details for player/marker i.e. handicap/strokes receivable, stableford scores, actual scores, are downloaded to mother unit 31 which provides a computerised handicap assessor and record function. At this stage (or before if not required for record purposes) whilst the device 10 is in playing mode for Devilish course, pressing of buttons 18, 21 jointly will clear the inset codes and player and marker detail are erased from the memory in device 10 whilst course details are untouched.

The information loaded into unit 22 prior to use may be more comprehensively fed into the device 10 using the interface unit 30 connected to a computer such as 32 or the computer in the controller unit 31 that has already been programmed with this information and having the software to enable the programme to be downloaded to the unit 22 so that unit 22 can be pre-programmed with details of the course and if desired marker's and player's details.

In a modified device, the display 14 from left to right is arranged to indicate HOLE, PAR, STROKE INDEX, YARDAGE, PLAYER'S SCORE, PLAYER'S STABLEFORD SCORE, MARKER'S SCORE and MARKER'S STABLEFORD SCORE. An on/off switch is

provided. When switched on, the display 14 shows "enter pass code" and selected buttons e.g. 18, 19 or 18, 19, 20, 21 are operated in a coded sequence particular to the operator e.g. 18, 19, 18, 19. The display then changes to Exit Edit? View? Play? corresponding respectively to buttons 18, 19, 20, 21. If button 18 i.e. Exit is pressed the display returns to "enter pass code". If button 19 i.e. Edit is pressed, the display 14 shows the code for four courses e.g. DEVI, CEVI, BEVI, AEVI corresponding to buttons 18, 19, 20, 21. If it is desired to Edit, i.e. alter or remove, course DEVI, button 18 is pressed. The display changes to "edit game title; DEVI" with a cursor flashing on letter D. Buttons 19, 20 are pressed as relevant to change letter D e.g. increment button 20 pressed once to change D to E i.e. course EEVI.

If button 18 is now pressed, the display changes to correspond to hole 1 of EEVI course. Using button 21 to move the cursor along the display and buttons 19, 20 to decrease/increase the display at the cursor, the par, stroke, index and yardage can be edited or inserted as appropriate for each hole, button 20 being pressed to increase the hole number by one. When all holes have been edited, pressing button 18 will return the display to "Exit, Edit?, View?, Play?".

Operation of button 20 will obtain "View mode" in which the stored data can be viewed but not edited hole by hole using relevant buttons as above.

If button 21 i.e. "Play" is pressed, the display changes to

the four codes of courses. The appropriate button e.g. 21 for AEVI is operated. The display changes to P1 ref.../..

strokes...

The personal code e.g. 111/DH for player 1 is then entered using buttons 19, 20; then 21 is operated to move to strokes and the number of strokes receivable is entered. Button 21 is pressed twice and the display changes to P2 ref .../..

strokes ... and so on.

Button 18 is pressed to obtain the display to hole 1 e.g. 01 3 14 205 00 05 00 ready for insertion of actual scores at 00 and 00 as played, button 21 being used to move the cursor. As the actual scores (strokes taken) are entered the relevant stableford score is altered (if appropriate) by unit 22 in accordance with the information already input into the device. This can be repeated for each hole and the 9 hole out, 9 hole in and 18 hole totals are displayed as above. If there are four players, there are upper and lower displays as above, respectively for players 1, 2 and 3, 4; button 18 being used to move between displays.

If the four players are playing as two pairs, the score of each pair is treated as a score of one player.

Buttons 19, 20 if held depressed may cause the relevant display to scroll up or down through a range of numbers or the alphabet as appropriate.

The device is thus a golf score calculator and is an electronic hand-held device that can be carried in the pocket, attached to a belt fastened round a user's waist or clipped to a golf bag or trolley.

The device 10 is designed to replace the conventional score card used at present, making it easier and quicker for a player to enter the scores, thus speeding up the game. As the device has both the capacity for storing all the relevant information and the means to carry out all the calculations the device will simplify the scoring system. The unit 31 can have a cross-check analyser device for double checking the recorded data of the players, each device 10 is the same and recorded correctly.

With the aid of the interface unit and computer, handicaps can be recalculated automatically by the computer when the information from the device is downloaded to the computer, thus updating the handicap information stored in the controller unit 31. Using the software in the unit 31, the club secretary can receive scores from a large number of devices 10 and can use the information, for example, to check the scores achieved at a particular hole and consider whether the appropriate parity has been given to that hole; or to consider whether a part of the course is easy or difficult on a seasonal basis.

A player will be able to analyse the round of golf after the game by selecting and displaying the information for the various

holes, using the device 10.

Thus the device 10 is an electronic handheld golf club score card replacement and reproduces medal and stableford scores related to each hole for both player and marker. After club player and marker details are installed, the holes are displayed on a single line per hole basis with option for automatic move on to the next hole upon completion of information. All outward, inward scores are totalled automatically along with final totals displayed for player and marker. Each electronic score card 10 has the capability of being individually provided with player and marker detail/references plus golf club score card details. Also, if the device 10 is pre-loaded, this can be with course details for a plurality of courses, each with a code as above so that in use the loaded details of a selected course are accessed from memory 24 and readied by unit 22 for display.

Handicaps/strokes receivable are preset in the device for both player and marker to ensure stableford scores are automatically displayed for each hole and automatic totals on inward and outward cards. Handicaps recorded in the device 10 follow golf club reference, players reference and marker reference followed by each of their computer code reference where appropriate.

All scores are principally related to either marker or scorer by their reference and number thus can be transposed to computer 32 e.g. a P.C. and/or Handicap Committee receiver computer to place automatic handicap analysis. No return (NR) score

can be recorded to either player and/or marker. Thus a single hole score entered as, for example, 99 will act as an NR code. Once NR code is inserted in player/markers scores, the totals will be recorded as NR code also. Continue scoring as normal after inserting NR code. Stableford scores are not affected. Unit 31 transposes this information to computer 32 if required along with offering an open screen for non-users of the device to place information direct to Handicap Committee computer or Unit 31 memory.

Unit 31 is a secondary computer e.g. PC installed at the handicap committee's office/professional shop and allows recorded scores to be off-loaded to a handicap software programme for check and/or immediate analysis. Checks on players scores are only recorded when coupled with markers score in system. The mother unit 31 has a secondary display to allow users of the device 10 to punch in their scores also, thereby ensuring all handicaps can be installed and automatically adjusted by the system.

For those few who hold their own computer at home, the device can hold the last round scores until cleared by the marker/player and thus can be returned home and off loaded for later analysis/record.

Different club card yardage/par and stroke index can be individually inserted by the player or can alternatively sent to a supplier for the installation of the appropriate isolated yardage chart, distinguishing the white, red, yellow, blue, green etc. card for the benefit of the supplier. Hence the device 10 can link direct with a

supplier's computer or unit 31 to have single golf club score card details placed in the device 10.

The purpose of the unit 31 is to interact with the information in the device 10. Thus the device 10 off-loads a full display to be illustrated to the player to ensure he/she can be satisfied the card is correct, thereafter punching in through the unit 31 the full information to record in the golf club computer memory.

The unit 31 allows persons not having a device 10 to punch into the unit 31 their scores and their markers score in a simplified form and thus the club handicap records are maintained within the same format.

Unit 31 has a separate function - to remove head information of yardage, par and stroke index out of the device 10 and store other course information that has to be re-implanted in the device 10 to allow the player to recommence a game with new course details without having to implant information manually. For example, unit 31 could hold details of up to 150 courses or more selectable by appropriate code input. Unit 31 can be portable e.g. lap top.

Thus in using the device 10, when the course and handicap details have been loaded in, a user is only required to enter his, and the player's, actual score at each hole in order to have access to a full display of information, hole by hole.

In some examples the device 10 can accommodate the scores of four golfers e.g. in a fourball.

The device 10 is a hand held golf score recorder for one, two or more players, similar to existing golf course score cards and providing automatic interaction via an introducing (mother) unit 31 to a golf club/society computerised handicap software programme. This results in allowing golf club/society programmer to prepare full golf club/society competition analysis at the press of a button. Preparation of information of prize winners and handicap adjustment both upward and downward becomes automated. The tedious manual operation to install golf club/society competitors total scores is removed. Moreover, this system will provide the facility for hole-by-hole analysis for full membership.

The device transposes the competition details of a golf card for the specific golf course into a hand-held carrying model to be used during the course of play on competition. ensuring the ordinary lay-golfer can interpret the information in alignment with normal golf card provisions and enter his players medal score by one singular operation prior to moving onto register his markers score by a singular operation thereafter moving on to the next hole for completion of the scorecard as a full record of medal and stableford score for the whole 18 holes of golf.

**CLAIMS**

1. An electronic golf score device comprising a display providing for each hole a display of hole number, marker's score, hole yardage, par rating, stroke index, players' stableford score, and player's score; means operable to insert the number of strokes taken at a hole by the marker and the player; and programmable means for receiving the number and producing the relevant display.
2. A device as claimed in Claim 1, in which the display includes marker's stableford score.
3. A device as claimed in Claim 1 or Claim 2, adapted for recording the score of four golfers, and means for selecting which golfer's score is to be displayed.
4. A device as claimed in any preceding claim, comprising a lid movable between an open position in which the display is visible and a closed position covering and protecting the display.
5. A device as claimed in any preceding claim, including means for displaying, for each hole, information relating to that hole, and control means for inserting information relating to the hole and a golfer, the control means comprising first means for selecting the hole in respect of which information is to be displayed, means for inserting a score for the selected hole, and programmable means responsive to the inserted score for determining the information to be displayed.

6. An electronic golf score device comprising means for displaying, for each hole, information relating to that hole, and control means for inserting information relating to the hole and a golfer, the control means comprising first means for selecting the hole in respect of which information is to be displayed, second means for inserting a score for the selected hole, and programmable means responsive to the inserted score for determining the information to be displayed.
7. A device as claimed in Claim 6, including means for correcting the inserted score.
8. A device as claimed in Claim 6 or Claim 7, in which the second means comprises a single operating element.
9. A device as claimed in any of claims 6 to 8, in which the programmable means has a single operable element.
10. A device as claimed in any of Claims 6 to 9, in which the programmable means is adapted to receive an inserted score and initiate display of the relevant stableford score.
11. A device as claimed in any preceding claim, co-operable with a control unit to transfer data from and to the control unit for loading data into the device and downloading score data to the control unit.

12. A device as claimed in any of claims 6 to 9 arranged to receive data for two, three or four golfers.
13. A device as claimed in any preceding claim, sized to be hand-held.
14. An electronic golf score device substantially as hereinbefore described with reference to and as shown in the accompanying drawings.
15. An electronic golf score card device.

**Patents Act 1977**  
**Examiner's report to the Comptroller under Section 17**  
**The Search report)**

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**Application number**  
**GB 9422314.6**

**Search Examiner**  
**D W WHITFIELD**

**Date of completion of Search**  
**20 DECEMBER 1994**

**Documents considered relevant**  
**following a search in respect of**  
**Claims :-**  
**1 TO 15**

(ii)

**Categories of documents**

X:	Document indicating lack of novelty or of inventive step.	P:	Document published on or after the declared priority date but before the filing date of the present application.
Y:	Document indicating lack of inventive step if combined with one or more other documents of the same category.	E:	Patent document published on or after, but with priority date earlier than, the filing date of the present application.
A:	Document indicating technological background and/or state of the art.	&:	Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
P, X	GB 2271063 A	(SMITH) whole document	1 to 13, 15
X	GB 2257914 A	(TAYLOR) whole document	1 to 13, 15
X	GB 2743302 A	(WU) whole document	1 to 13, 15
X	GB 2133293 A	(CHEESBROUGH) whole document	1 to 13, 15
X	US 5095430	(REMEDIO) whole document	1 to 13, 15
X	US 4910677	(REMEDIO) whole document	1 to 13, 15
X	US 4864592	(LEE) whole document	1 to 13, 15
X	US 4142236	(MARTZ) whole document	1 to 13, 15

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